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Asbestos Remediation Plan

2018 Superior Refinery Fire

Superior Refining Company LLC

Husky Superior Refinery, Superior, Wisconsin

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Table of Contents

1. Introduction and Objectives

At the request of Superior Refining Company LLC (SRC), a subsidiary of Husky Energy, Inc. (Husky), GHD Services Inc. (GHD) will provide air monitoring and industrial hygiene (IH) support related to the 2018 Superior Refinery fire. The incident occurred at the SRC refinery (Site) located in Superior, Wisconsin. These services are provided to assist SRC with ensuring health and safety during cleanup and management of asbestos-containing materials or suspected asbestos-containing materials (collectively, ACM) that may be encountered during the incident and subsequent response and remediation efforts.

The purpose of this work plan is to implement a systematic assessment and recovery effort. This plan addresses proper ACM management during the response and remediation phases of the project. The specific objectives include the following:

- Prevent public or site worker exposure to ACM;
- Sample and document potential airborne asbestos exposures at the site perimeter during active asbestos cleanup / abatement;
- Identify and recover ACM external to the refinery fence line;
- Identify and recover damaged ACM within plant affected by the incident;
- Periodically observe cleanup activities to ensure proper cleanup and waste packaging methods are being utilized. Observe employee and equipment decontamination procedures; and
- Where safe and appropriate, sample materials suspected to contain asbestos. At this time, bulk sample collection is anticipated to be limited to sampling insulation that is remaining on fixed plant equipment including exchangers, drums, etc., that may be damaged and may require removal or repairs as overall plant repairs are conducted.

To accomplish the objectives outlined above, we propose the following activities:

- Ambient Air Sampling plan:
    a. During asbestos abatement monitoring, air samples will be collected along the perimeter of the asbestos abatement exclusion zone.
    b. The site asbestos abatement contractor (In-Line Construction or other Wisconsin-licensed asbestos abatement contractor) will collect personal samples from their employees that are performing abatement. GHD will receive and review all personal sample results.
    c. As appropriate, collect ongoing area samples surrounding the refinery.
    d. Analysis of air samples will be performed using phase contrast microscopy (PCM) with transmission electron microscopy (TEM) to be used as needed to clarify results.

- ACM Debris Survey
    a. As access is available to interior portions of the plant, identify locations for and coordinate placing asbestos warning / danger tape around locations of potential asbestos.
    b. Perform a limited visual asbestos survey of the fire affected and other damaged areas to determine areas that have ACM debris.
    c. Mark areas that have visible ACM debris.

- Damaged ACM Survey
    a. Where safe to do so, perform an asbestos survey of the fire affected and other damaged areas to determine equipment, piping, etc. that have ACM debris.
    b. As appropriate, collect bulk samples of suspect materials to confirm asbestos content so that the materials can be properly managed during the recovery.
    c. Mark on drawings, equipment, piping, etc. that has damaged ACM debris

GHD will continue air monitoring services until the project is completed and potential worker or community exposures to airborne asbestos fibers associated with the incident are eliminated or until directed by Husky that this service should be demobilized. The air monitoring data will be collected and compiled in accordance with established IH guidelines and practices. In addition, the results will be communicated to Husky, site workers, and regulatory agencies as required and/or as necessary to ensure the safety and health of potentially affected individuals.

2. Exposure Standards and Guidelines

The US Occupational Health and Safety Administration provides established exposure limits for a worker's exposure to hazardous chemical substances. Additionally, Threshold Limit values (TLVs) are established by the American Conference of Governmental Industrial Hygienists (ACGIH).

These are summarized below:

Analyte	OSHA PEL		ACGIH TLV	Units
	TWA	Excursion (30 minute exposure)	TWA[1]	
Asbestos	0.1 f/cc	1.0 f/cc	0.1 f/cc	Fibers per cubic centimeter of air.

2.1 Perimeter Exposure Monitoring Criteria

During asbestos abatement activities, work area perimeter air monitoring will be performed to ensure that engineering controls prevent the release of asbestos fibers from the work area. If ambient air samples exceed the accepted asbestos clearance criterion of 0.01 f/cc (AHERA standard for building re-occupancy), work will be halted and controls (wetting, covering or wrapping damaged materials, etc.) will be put in place. Work will not restart until work practices and/or engineering controls are modified to ensure perimeter concentrations do not exceed the clearance criterion.

2.2 Personal Air Monitoring and Bulk Sampling Methods

During asbestos abatement activities, OSHA methods ID160 (personal air monitoring) and ID191 (bulk sampling) will be followed. The collection of air monitoring samples will be completed using calibrated personal sampling pumps with 25-mm diameter cassettes with mixed-cellulose ester (MCE) filters and analyzed by PCM. All sampling results will be communicated to abatement personnel in compliance with applicable regulations.

3. Quality Assurance/Quality Control (QA/QC) and Reporting

Data collected will be stored in an on-site electronic archive. The monitoring/sampling data will be entered into an electronic database (spreadsheet or equivalent), and will undergo a quality assurance and quality control (QA/QC) review. Data entry forms and field notes will be kept on-site and retained for reference upon completion of the project. If necessary, full laboratory analysis data packages will be provided, and associated data validation processes will be arranged.

During the project, interim reporting of results may be required. This may include data summaries, maps, or other presentations of preliminary monitoring and sampling results. For example, a data summary will be provided to SRC every 24 hours, once data have undergone an initial QA/QC. Such reporting will be considered preliminary, as a final QA/QC of the data will not be complete. At the completion of the project, a report will be prepared in which data collected through monitoring and integrated sampling analyses will be compiled, summarized, and reported to SRC. Data contained in the final report will have been through the QA/QC process, will be reviewed by a Certified Industrial Hygienist (CIH), and will be considered final.

4. Asbestos Abatement / Cleanup Plan

There are several considerations for addressing damage to ACM during the recovery and repair operations to be conducted at and surrounding the plant. In order of importance, asbestos activities will be conducted to:

1. Address insulation that is off site or outside the refinery boundaries as a result of the incident. In instances observed to date, the insulation outside the refinery boundary or off refinery property is not suspect ACM. However, as a conservative response, insulation from the incident that is identified outside the refinery property will be collected for proper disposal.
2. Small-scale, short duration asbestos abatement activities needed to accommodate mechanical or process activities required to stabilize and de-energize refinery equipment and piping.
3. Large-scale cleanup of asbestos-containing debris, removal of asbestos-insulated equipment that is scheduled for demolition, removal and disposal of asphalt that may be contaminated with asbestos due to damage to mechanical equipment insulation.

4.1 Offsite / Extra-refinery Cleanup

Off-site cleanup of potential ACM debris from the refinery will be accomplished using the site embedded asbestos abatement contractor or other Wisconsin-licensed asbestos abatement contractor. The contractor will perform the cleanup of ACM primarily using manual methods.

As a conservative measure, materials identified offsite will be assumed to be ACM, and packaged and disposed of as such. Representative samples of collected materials will be taken for laboratory analysis to determine asbestos content. A general map will be generated to identify locations where debris has been located offsite.

Work methods and personal protective equipment (PPE) will be selected and utilized in accordance with existing regulations and based on the asbestos abatement contractor personnel exposure monitoring program records.

Should any pieces of metal that may be considered “evidence” be encountered during offsite insulation cleanup, the location will be recorded via GPS coordinates and Baker Engineering and Risk Consultants (BakerRisk) will be contacted to facilitate removal of evidence pursuant to the General Protocol for Identification and Collection of Evidence Items, dated May X, 2018 or as thereafter amended.

4.2 Small-Scale, Short Term Abatement

As may be required, and similar to routine maintenance, the operations and mechanical organizations will require limited scope asbestos abatement of mechanical equipment to accommodate the process of draining, de-energizing, and stabilizing the plant equipment. To accomplish this, the mechanical and process planners will coordinate directly with the abatement contractor to scope and schedule the smaller projects. This coordination will include measures

(such as exclusion zones, barrier tape, and/or signage) to minimize the risk of exposure to non-abatement personnel.

The abatement contractor will make available adequate personnel to accommodate the limited abatement.

Abatement methods and techniques will vary and may include glovebag removal, mini enclosures, wrap and cut (whole pipe removal) or other methods as appropriate and as allowed by applicable regulations; provided, however that GHD will inform and receive consent from BakerRisk before removal of piping, process equipment, or structural components. All collected insulation materials will be packaged and disposed as ACM.

Should any pieces of metal that may be considered "evidence" be encountered during offsite insulation cleanup, the location will be recorded via GPS coordinates and Baker Engineering and Risk Consultants (BakerRisk) will be contacted to facilitate removal of evidence pursuant to the General Protocol for Identification and Collection of Evidence Items, dated May X, 2018 or as thereafter amended.

Decontamination procedures following abatement may vary from standard abatement decontamination. Decontamination facilities typical for asbestos abatement (multiple stage structures with showers) will be available and will be utilized. It may be necessary to perform additional decontamination steps to address the presence of asphalt throughout the work areas. The need for additional decontamination steps will be determined prior to the start of any individual project and any decontamination procedure outside the routine change and shower asbestos procedure will be performed with the assistance of SRC personnel and facilities.

4.3 General Asbestos Abatement and Site Cleanup

Once the site has been stabilized and equipment has been drained and de-energized, general site abatement and cleanup will commence. To the extent practicable, ACM that can be removed will be removed prior to conducting demolition activities that may disturb ACM. If limited demolition activities are required to gain access for ACM to be removed, work will be done in such a manner to minimize the risk of exposure. The work will include measures (such as exclusion zones, barrier tape, and/or signage) to minimize the risk of exposure to non-abatement personnel.

The cleanup methods to be utilized will, to some extent, be determined by successful methods that were developed during the work performed in previous remedial work phases. Those methods may include glovebag, enclosure removal, and alternative methods approved by the Wisconsin Department of Natural Resources. Large-scale removal of asphalt will require the use of heavy equipment. All collected insulation materials will be packaged and disposed as asbestos-containing materials.

Personal decontamination procedures following abatement may vary from standard abatement decontamination, but will generally following decontamination procedures accordance with 29 CFR 1910.120 (k). Decontamination facilities typical of asbestos abatement (multiple stage structures with showers) will be available and will be utilized. It may be necessary to perform additional decontamination steps to address the presence of asphalt throughout the work areas. The need for additional decontamination steps will be determined prior to the start of any individual project and

any decontamination procedure outside the routine change and shower asbestos procedure will be performed with the assistance of Husky personnel and facilities.

Decontamination measures will be implemented to prevent contaminant tracking on and off Site. Vehicles, equipment, and workers leaving areas of potential contamination will exit through a Decontamination Reduction Zone (DRZ) prior to entry into Clean Zones from the Exclusions Zones. The DRZ will contain an equipment decontamination pad to accommodate the largest piece of on Site potentially contaminated equipment. The decontamination pad will be formed with a bed and berm, overlain by one layer of high-density polyethylene sloping toward a sump. The DRZ will provide, operate, and maintain portable, high pressure, wash units. The DRZ will maintain necessary equipment, pumps, and piping required to collect and contain equipment decontamination wastewater and sediment and transfer same to approved storage facilities. Decontamination facilities and work activities will be sequenced to prevent contaminant tracking